

H.A

Notice of Allowability

Application No.

10/798,841

Applicant(s)

TESAR ET AL.

Examiner

Alicia M. Harrington

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Examiner's amendment and amendment filed on 9/9/05.
2. ☒ The allowed claim(s) is/are 2-27, 29-43 and 56-60.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 0905
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 0905.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

Georgia Epps
Georgia Epps
Supervisory Patent Examiner
Technology Center 2800

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with Neil Ferraro on 9/20/05.
3. The application has been amended as follows:

In the claims:

56. A lens system comprising a plurality of lens elements and an aperture stop, each lens element having a lens surface defined by a radius of curvature (r), a thickness (T), and an index of refraction (n), the plurality of lens elements being spaced from each other by a distance (h), the lens system satisfying at least one of the following conditions:

- $1000 < r_4/r_2$ or $r_4 = r_2 = \text{approximately infinity}$;
- $-0.56 < r_3/r_9 < -0.81$;
- $0.9 < r_8/r_9 < 1.1$ or $r_8 = r_9$;
- $0.9 < r_{10}/r_{11} < 1.1$ or $r_{10} = r_{11}$;
- $0.7 < (h_1+h_2)/(h_3+h_4) < 1.1$;
- $0.95 < h_1+h_2+h_3+h_4+T_1+T_2+T_3+T_4+T_5+T_6 < f/1.02$;
- $1.71 < n_{L1}, n_{L2}, n_{L5}, n_{L6} < 1.79$; and
- $1.67 < n_{L3}, n_{L4} < 1.81$;

where:

r_2 represents a radius of curvature of an image side surface of a first lens element;

r_3 represents a radius of curvature of an object side surface of a second lens element;

r_4 represents a radius of curvature of an image side surface of the second lens element;

r_8 represents a radius of curvature of an object side surface of a fifth lens element;

r_9 represents a radius of curvature of an image side surface of the fifth lens element;

r_{10} represents a radius of curvature of an object side surface of a sixth lens element;

r_{11} represents a radius of curvature of an image side surface of the sixth lens element;

h_1 represents a gap distance between the image side surface of the first lens element to the object side surface of the second lens element;

h_2 represents a gap distance between the image side surface of a third lens element to the aperture stop;

h_3 represents a gap distance between the aperture stop to an object side surface of a fourth lens element;

h_4 represents a gap distance between the image side surface of the fifth lens element to the object side surface of the sixth lens element;

T_1 represents a thickness of the first lens element;

T_2 represents a thickness of the second lens element;

T_3 represents a thickness of the third lens element;

T_4 represents a thickness of the fourth lens element;

T_5 represents a thickness of the fifth lens element;

T_6 represents a thickness of the sixth lens element;

n_{L1} represents an index of refraction of the first lens element;

n_{L2} represents an index of refraction of the second lens element;

n_{L3} represents an index of refraction of the third lens element;

n_{L4} represents an index of refraction of the fourth lens element;

n_{L5} represents an index of refraction of the fifth lens element; and

n_{L6} represents an index of refraction of the sixth lens element,

wherein the lens system further comprises a focal length of approximately 10 mm.

57. A lens system comprising a plurality of lens elements and an aperture stop, each lens element having a lens surface defined by a radius of curvature (r), a thickness (T), and an index of refraction (n), the plurality of lens elements being spaced from each other by a distance (h), the lens system satisfying at least one of the following conditions:

$$\begin{aligned} &1000 < r_4/r_2 \text{ or } r_4 = r_2 = \text{approximately infinity;} \\ &-0.56 < r_3/r_9 < -0.81; \\ &0.9 < r_8/r_9 < 1.1 \text{ or } r_8 = r_9; \\ &0.9 < r_{10}/r_{11} < 1.1 \text{ or } r_{10} = r_{11}; \\ &0.7 < (h_1+h_2)/(h_3+h_4) < 1.1; \\ &0.95 < h_1+h_2+h_3+h_4+T_1+T_2+T_3+T_4+T_5+T_6 < f/1.02; \\ &1.71 < n_{L1}, n_{L2}, n_{L5}, n_{L6} < 1.79; \text{ and} \\ &1.67 < n_{L3}, n_{L4} < 1.81; \end{aligned}$$

where:

r_2 represents a radius of curvature of an image side surface of a first lens element;

r_3 represents a radius of curvature of an object side surface of a second lens element;

r_4 represents a radius of curvature of an image side surface of the second lens element;

r_8 represents a radius of curvature of an object side surface of a fifth lens element;

r_9 represents a radius of curvature of an image side surface of the fifth lens element;

r_{10} represents a radius of curvature of an object side surface of a sixth lens element;

r_{11} represents a radius of curvature of an image side surface of the sixth lens element;

h_1 represents a gap distance between the image side surface of the first lens element to the object side surface of the second lens element;

h_2 represents a gap distance between the image side surface of a third lens element to the aperture stop;

h_3 represents a gap distance between the aperture stop to an object side surface of a fourth lens element;

h_4 represents a gap distance between the image side surface of the fifth lens element to the object side surface of the sixth lens element;

T_1 represents a thickness of the first lens element;

T_2 represents a thickness of the second lens element;

T_3 represents a thickness of the third lens element;

T_4 represents a thickness of the fourth lens element;

T_5 represents a thickness of the fifth lens element;

T_6 represents a thickness of the sixth lens element;

n_{L1} represents an index of refraction of the first lens element;

n_{L2} represents an index of refraction of the second lens element;

n_{L3} represents an index of refraction of the third lens element;

n_{L4} represents an index of refraction of the fourth lens element;

n_{L5} represents an index of refraction of the fifth lens element; and

n_{L6} represents an index of refraction of the sixth lens element,

in combination with an aperture stop having a size selected from a plurality of aperture stop sizes.

59. A lens system comprising a plurality of lens elements and an aperture stop, each lens element having a lens surface defined by a radius of curvature (r), a thickness (T), and an index of refraction (n), the plurality of lens elements

being spaced from each other by a distance (h), the lens system satisfying ~~at least one~~ each of the following conditions:

- $1000 < r_4/r_2$ or $r_4 = r_2 = \text{approximately infinity}$;
- $-0.56 < r_3/r_9 < -0.81$;
- $0.9 < r_8/r_9 < 1.1$ or $r_8 = r_9$;
- $0.9 < r_{10}/r_{11} < 1.1$ or $r_{10} = r_{11}$;
- $0.7 < (h_1+h_2)/(h_3+h_4) < 1.1$;
- $0.95 < h_1+h_2+h_3+h_4+T_1+T_2+T_3+T_4+T_5+T_6 < f/1.02$;
- $1.71 < n_{L1}, n_{L2}, n_{L5}, n_{L6} < 1.79$; and
- $1.67 < n_{L3}, n_{L4} < 1.81$;

where:

r_2 represents a radius of curvature of an image side surface of a first lens element;

r_3 represents a radius of curvature of an object side surface of a second lens element;

r_4 represents a radius of curvature of an image side surface of the second lens element;

r_8 represents a radius of curvature of an object side surface of a fifth lens element;

r_9 represents a radius of curvature of an image side surface of the fifth lens element;

r_{10} represents a radius of curvature of an object side surface of a sixth lens element;

r_{11} represents a radius of curvature of an image side surface of the sixth lens element;

h_1 represents a gap distance between the image side surface of the first lens element to the object side surface of the second lens element;

h_2 represents a gap distance between the image side surface of a third lens element to the aperture stop;

h_3 represents a gap distance between the aperture stop to an object side surface of a fourth lens element;

h_4 represents a gap distance between the image side surface of the fifth lens element to the object side surface of the sixth lens element;

T_1 represents a thickness of the first lens element;

T_2 represents a thickness of the second lens element;

T_3 represents a thickness of the third lens element;

T_4 represents a thickness of the fourth lens element;

T_5 represents a thickness of the fifth lens element;

T_6 represents a thickness of the sixth lens element;

n_{L1} represents an index of refraction of the first lens element;

n_{L2} represents an index of refraction of the second lens element;

n_{L3} represents an index of refraction of the third lens element;

n_{L4} represents an index of refraction of the fourth lens element;

n_{L5} represents an index of refraction of the fifth lens element; and

n_{L6} represents an index of refraction of the sixth lens element,

~~wherein the lens system satisfies each of the conditions:~~

4. The following is an examiner's statement of reasons for allowance:

Regarding claim 3, prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of the dependent claims, in such manner that a rejection under 35 U.S.C 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in independent claims, which at least include the lens assembly of claim 1, wherein the plurality of lenses is further adapted to provide a ratio of the length of the lens assembly to the back focal Length of approximately 1.39 as claimed.

Regarding claim 5,13 and 29, prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of the dependent claims, in such manner that a rejection under 35 U.S.C 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in independent claims, which at least include wherein the plurality of lenses is arranged to define a total length, the total length is between approximately .95 and approximately 1.02 of the focal length.

Regarding claim 30, prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of the dependent claims, in such manner that a rejection under 35 U.S.C 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in independent claims, which at least include wherein the aperture stop disposed between the first lens group and the second lens group has an aperture stop size selected from a plurality of aperture stop sizes as claimed.

Regarding claim 56, prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of the dependent claims, in such manner that a rejection under 35 U.S.C 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in independent claims, which at least include a focal length of approximately 10mm as claimed.

Regarding claim 57, prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of the dependent claims, in such manner that a rejection under 35 U.S.C 102 or 103 would be proper. The prior art

fails to teach a combination of all the claimed features as presented in independent claims, which at least include an aperture stop having size selected from a plurality of aperture stop sizes.

Regarding claim 59, prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of the dependent claims, in such manner that a rejection under 35 U.S.C 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in independent claims, which at least include the lens system satisfying each of the conditions as claimed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alicia M. Harrington whose telephone number is 571 272 2330. The examiner can normally be reached on Monday - Thursday 9:30-6:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on 571 272 2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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